We claim:

1. A process for manufacturing nanoscale powders comprising:

providing a feed comprising solid powders;

providing thermal energy to the feed to produce a vapor from the feed;

nucleating nanoscale powders from the vapor;

thermally quenching said nucleated nanoscale powders;

collecting the thermally quenched nanoscale powders, wherein the step of providing thermal energy raises a peak processing temperature to at least 3000 K; and

wherein the process operates at a peak processing velocity greater than 46 feet per second.

2. The process of claim 1 wherein the thermal energy is provided in the form of plasma.

3. The process of claim 1 wherein the thermal energy is provided in the form of internal energy.

4. The process of claim 1 wherein the thermal energy is provided in the form of pulsed electric arc.

5. The process of claim 1 wherein the thermal energy is provided in the form of a combination of two or more of methods selected from the group consisting of internal energy, heat of reaction, inductive, microwave, electromagnetic, direct electric arc, pulsed electric arc and nuclear.

6. The process of claim 1 wherein the nanoscale powders comprise an oxygen containing compound.

7. The process of claim 1 wherein the nanoscale powders comprise a metal containing compound.

8. The process of claim 1 wherein the nanoscale powers comprise a metal.

9. The process of claim 1 wherein the nanoscale powers comprise an alloy.

10. A device prepared using the nanoscale powders manufactured using the process of claim 1.

11. A sensor prepared using the nanoscale powders manufactured using the process of claim 1.

12. A fuel cell prepared using the nanoscale powders manufactured using the process of claim 1

13. A battery prepared using the nanoscale powders manufactured using the process of claim 1.

14. A product prepared using the nanoscale powders manufactured using the process of claim 1.

15. The process of claim 1 wherein the peak processing velocity is greater than 1 Mach.

16. A process for manufacturing nanoscale powders comprising:

providing a feed comprising fluid;

providing thermal energy to the feed to produce a vapor from the feed;

nucleating nanoscale powders from the vapor;

thermally quenching said nucleated nanoscale powders;

collecting the thermally quenched nanoscale powders, wherein the step of providing thermal energy raises a peak processing temperature to at least 3000 K; and

wherein the process operates at a peak processing velocity greater than 46 feet per second.

17. The process of claim 16 wherein the thermal energy is provided in the form of plasma.

18. The process of claim 16 wherein the thermal energy is provided in the form of internal energy.

19. The process of claim 16 wherein the thermal energy is provided in the form of pulsed electric arc.

20. The process of claim 16 wherein the thermal energy is provided in the form of a combination of two or more of methods selected from the group consisting of internal energy, heat of reaction, inductive, microwave, electromagnetic, direct electric arc, pulsed electric arc and nuclear.

21. The process of claim 16 wherein the nanoscale powders comprise an oxygen containing compound.

22. The process of claim 16 wherein the nanoscale powders comprise a metal containing compound.

23. The process of claim 16 wherein the nanoscale powers comprise a metal.

24. The process of claim 16 wherein the nanoscale powers comprise an alloy.

25. A device prepared using the nanoscale powders manufactured using the process of claim 16.

26. A sensor prepared using the nanoscale powders manufactured using the process of claim 16.

27. A fuel cell prepared using the nanoscale powders manufactured using the process of claim 16.

28. A battery prepared using the nanoscale powders manufactured using the process of claim 16.

29. A product prepared using the nanoscale powders manufactured using the process of claim 16.

30. The process of claim 16 wherein the peak processing velocity is greater than 1 Mach.

31. The process of claim 1 wherein the nanoscale powders comprise a ceramic.

32. The process of claim 16 wherein the nanoscale powders comprise a ceramic.

33. The process of claim 1 wherein the nanoscale powders comprise an intermetallic.

34. The process of claim 16 wherein the nanoscale powders comprise an intermetallic.